FIG. 1

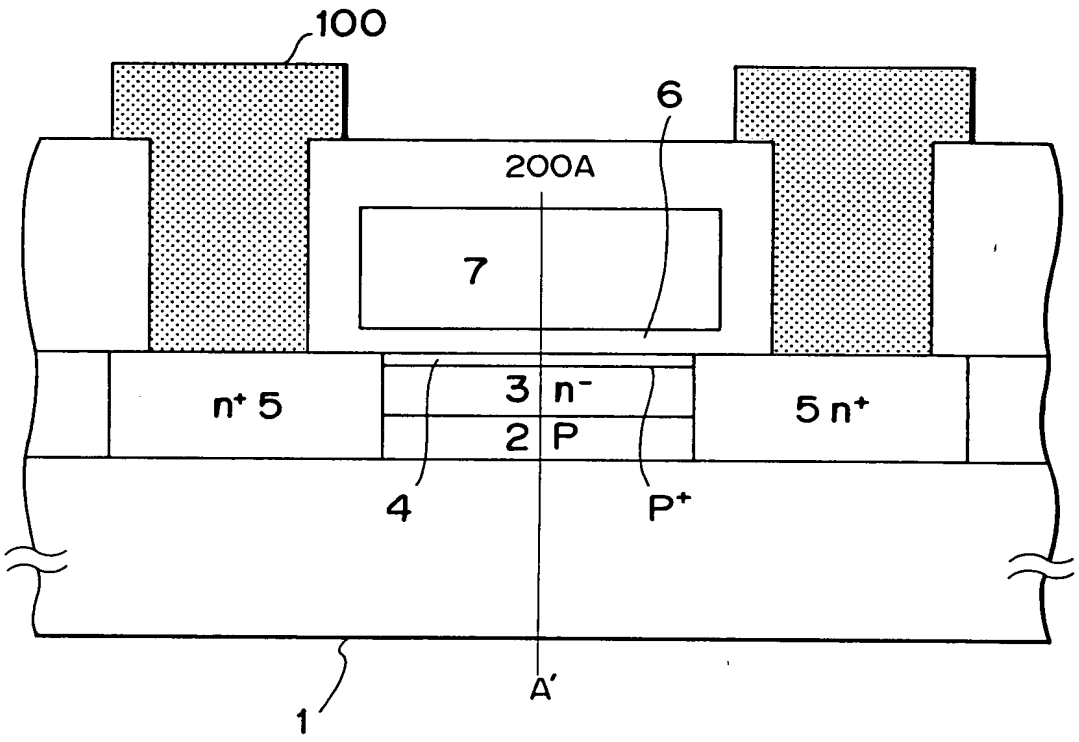

FIG. 2

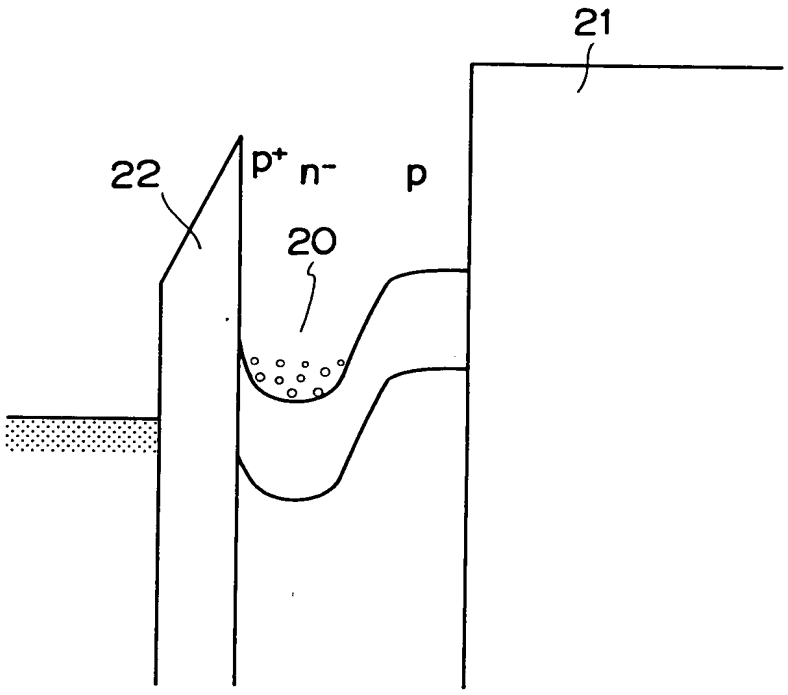

FIG. 3

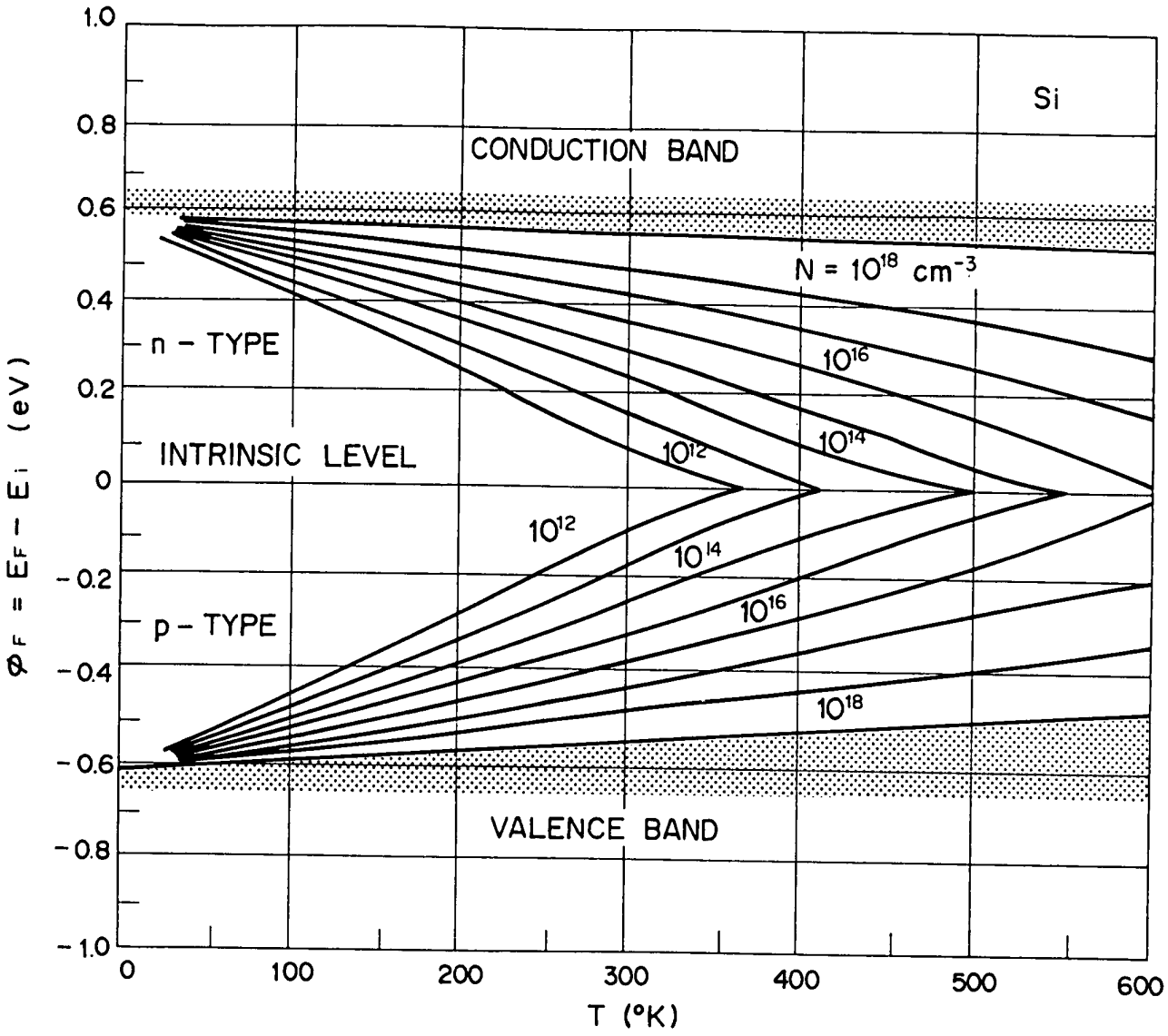
Si
CONDUCTION BAND
VALENCE BAND
n - TYPE
p - TYPE
INTRINSIC LEVEL
N = 10^18 cm^-3
10^16
10^14
10^12
10^12
10^14
10^16
10^18
φF = EF - Ei (eV)
T (°K)
1.0
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1.0
0
100
200
300
400
500
600

FIG. 4

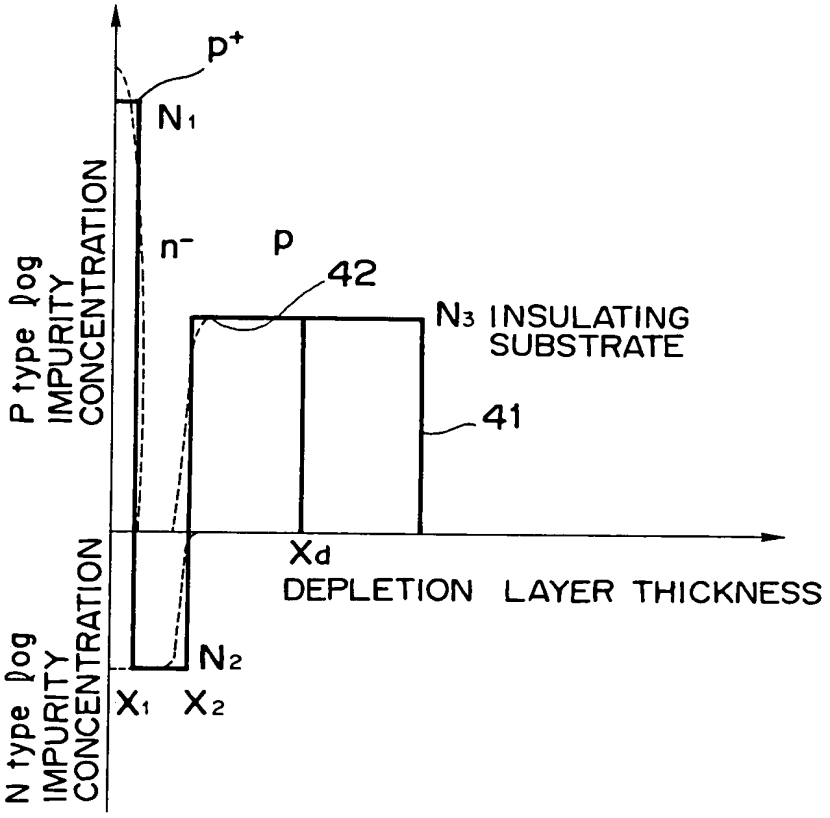
p+
N1
n−
p
42
N3 INSULATING SUBSTRATE
41
P type log IMPURITY CONCENTRATION
Xd
DEPLETION LAYER THICKNESS
N type log IMPURITY CONCENTRATION
N2
X1
X2

FIG. 5

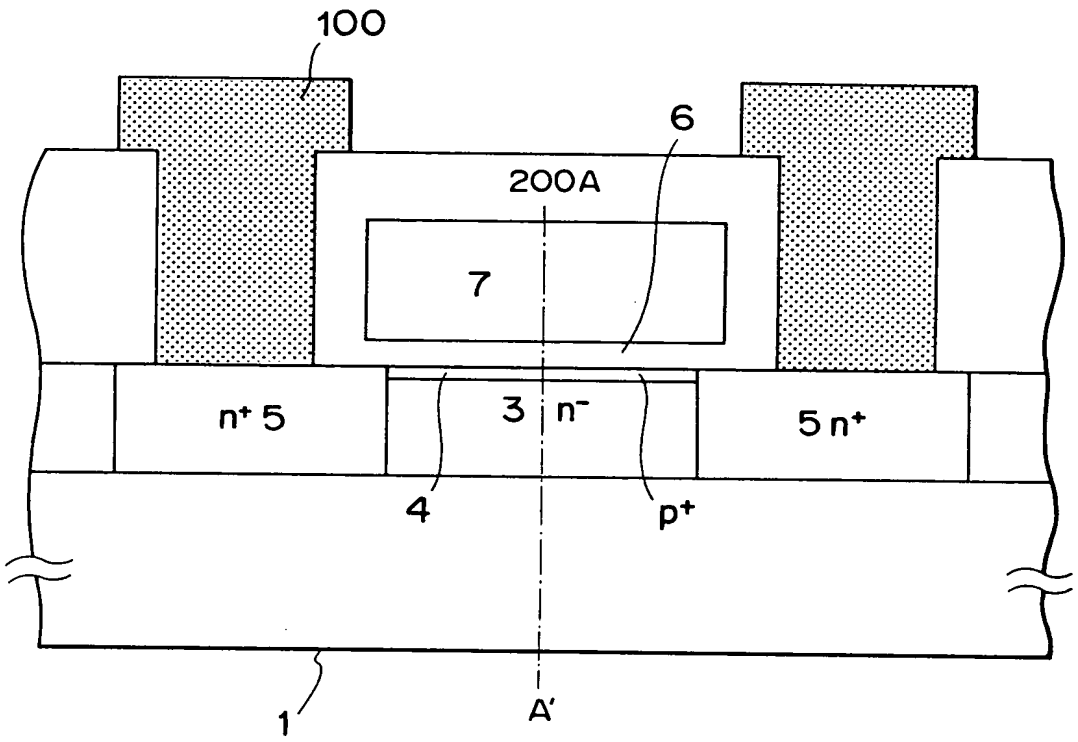

FIG. 6

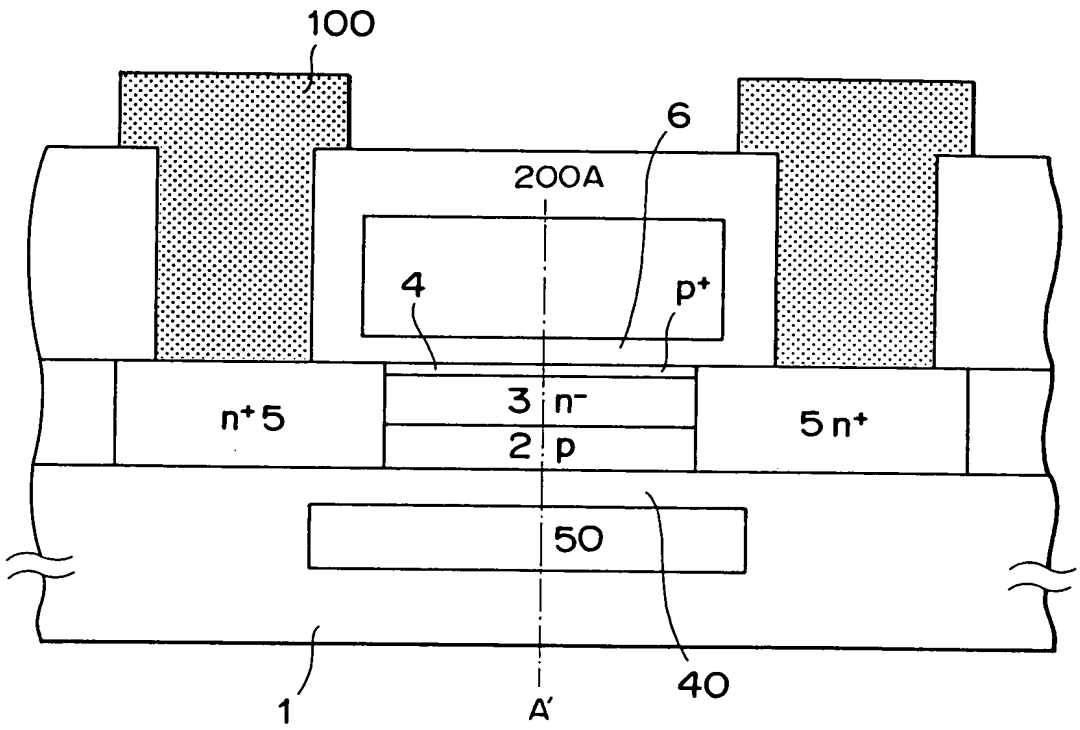

FIG. 7

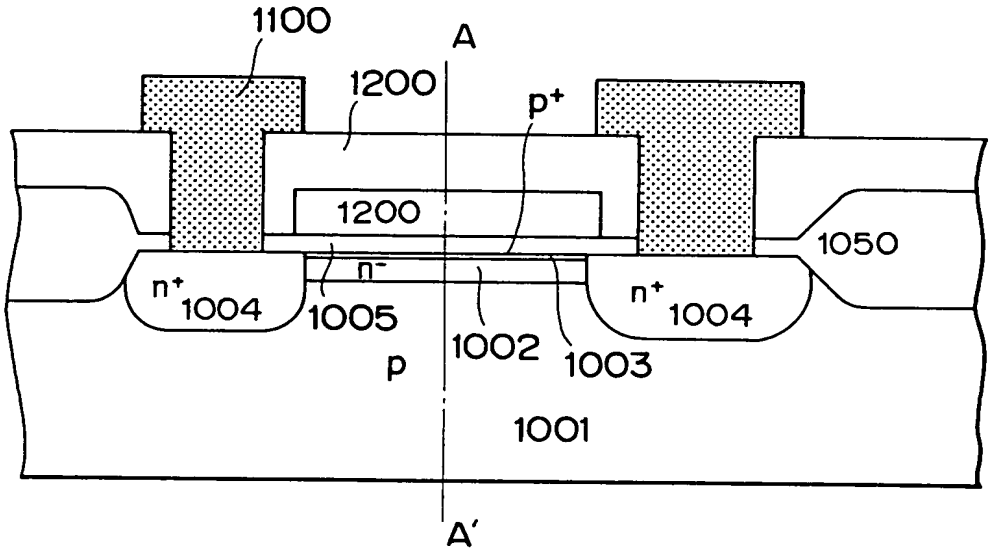

FIG. 8

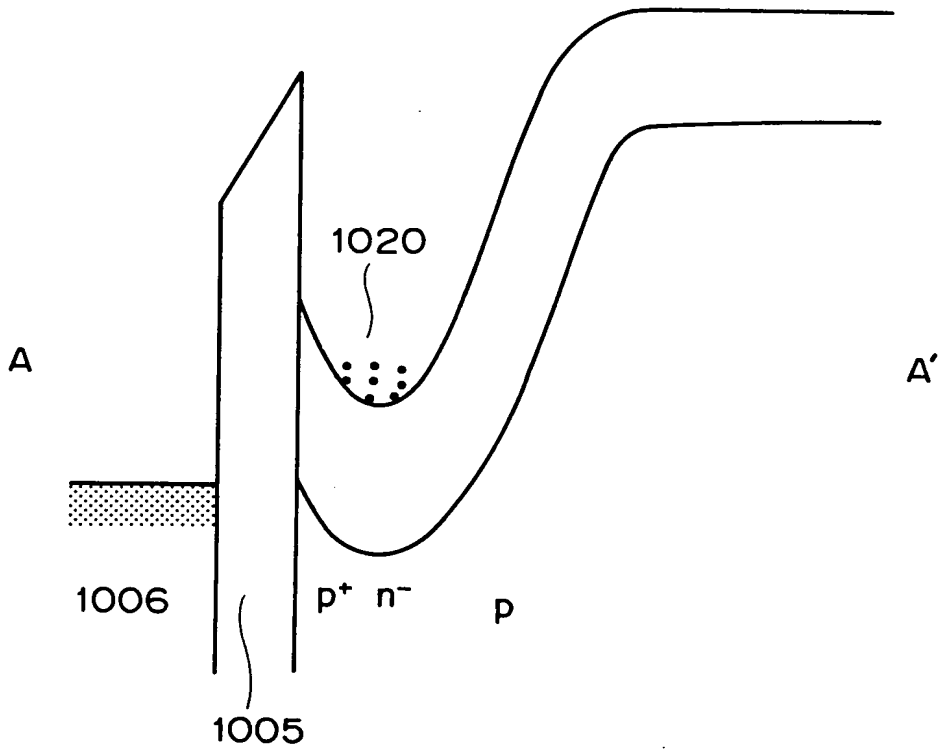

FIG. 9A

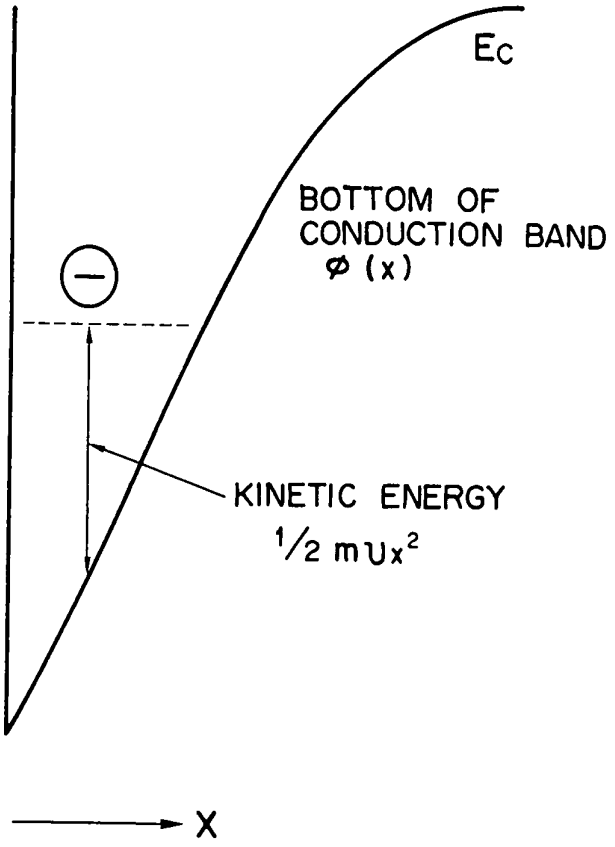
Ec
BOTTOM OF
CONDUCTION BAND
φ (x)
KINETIC ENERGY
1/2 mUx²
X

FIG. 9B

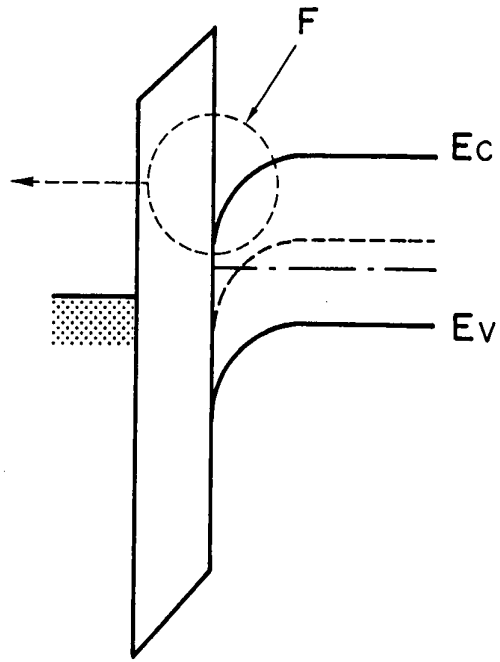
F
Ec
Ev

FIG. 10

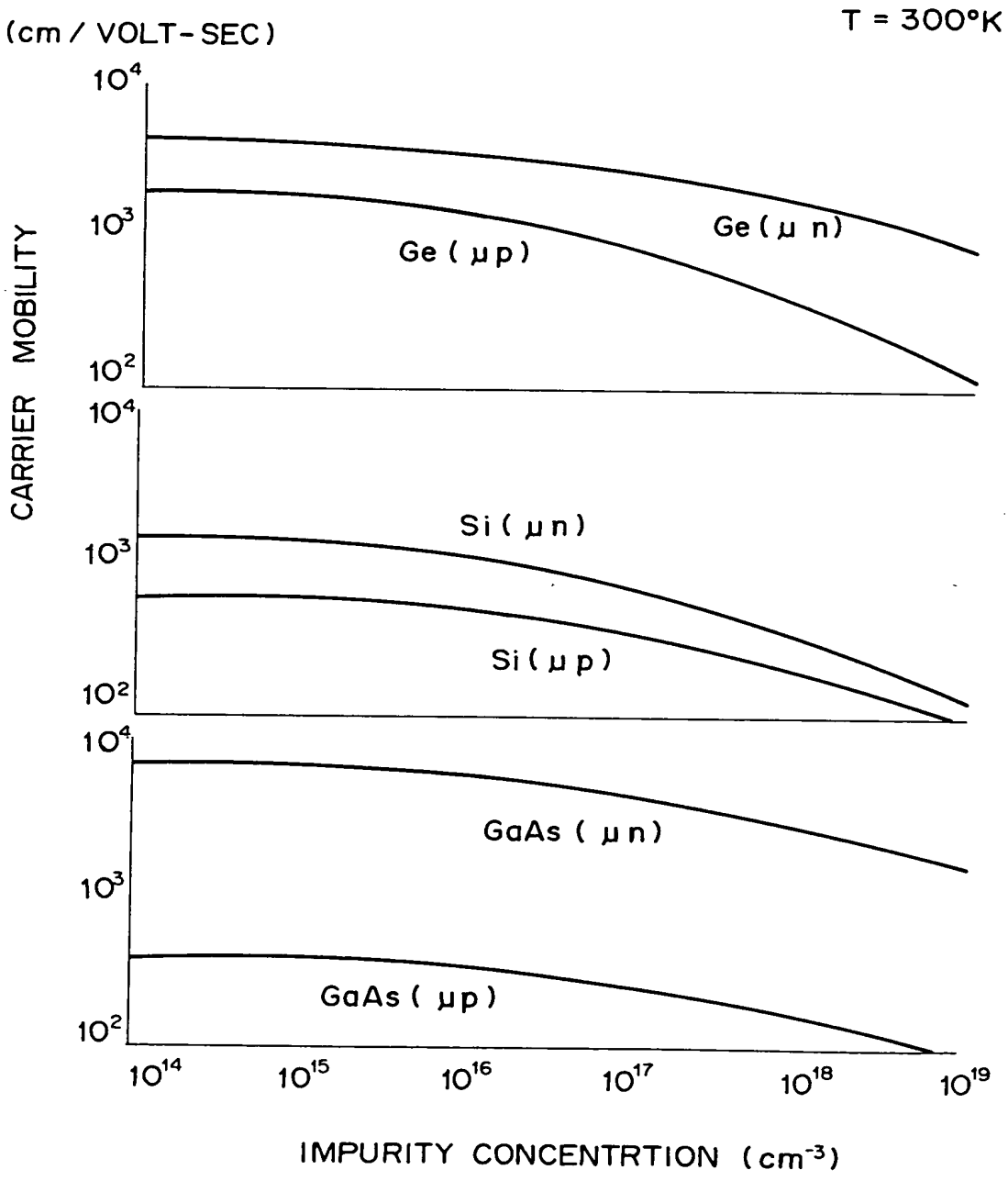
T = 300°K
(cm / VOLT-SEC)
CARRIER MOBILITY
10^4
10^3
10^2
Ge (μ n)
Ge (μ p)
Si (μ n)
Si (μ p)
GaAs (μ n)
GaAs (μ p)
10^14
10^15
10^16
10^17
10^18
10^19
IMPURITY CONCENTRTION (cm^-3)

FIG. 11

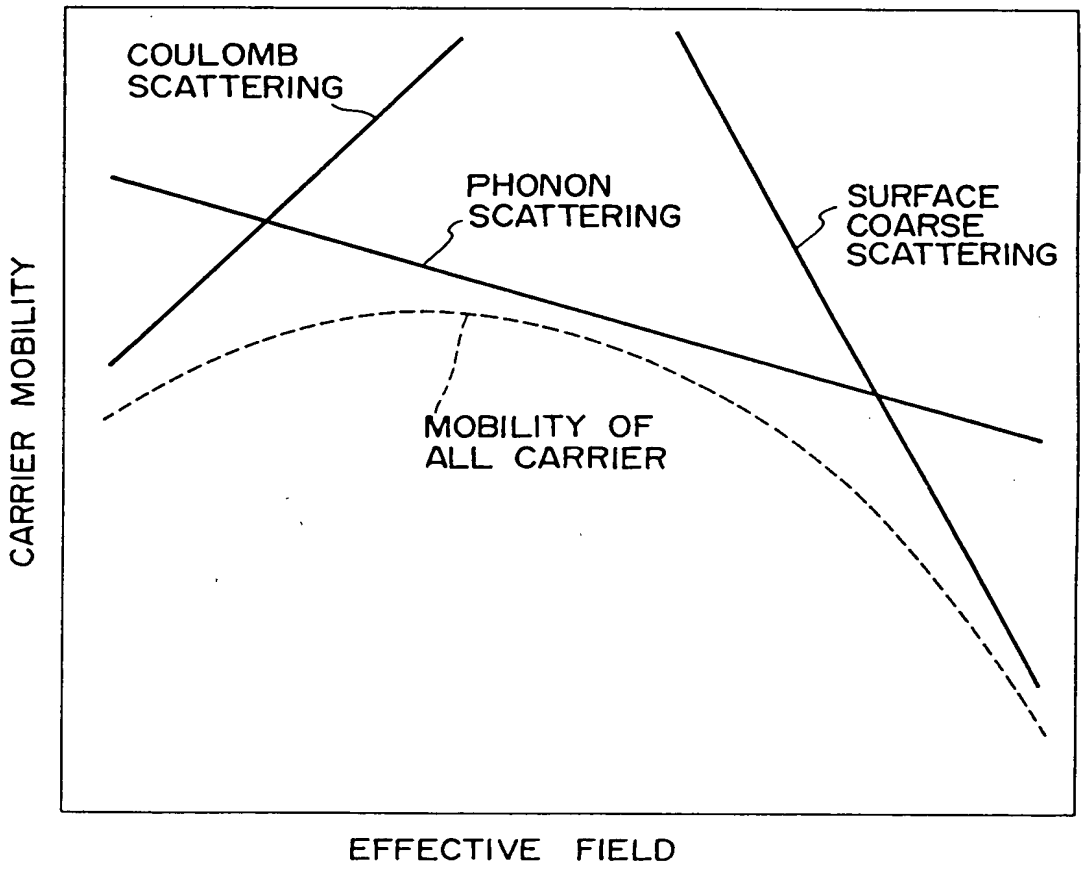
COULOMB
SCATTERING
PHONON
SCATTERING
SURFACE
COARSE
SCATTERING
MOBILITY OF
ALL CARRIER
CARRIER MOBILITY
EFFECTIVE FIELD

FIG. 12

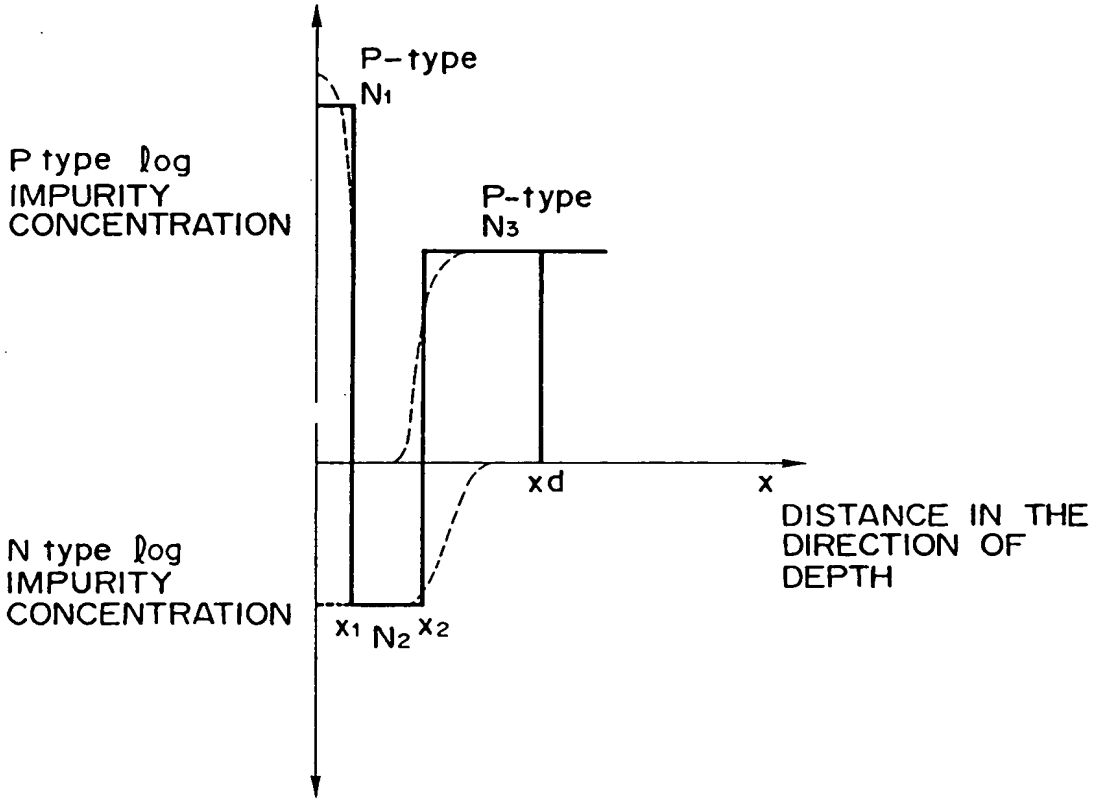
P-type
N1
P type log
IMPURITY
CONCENTRATION
P-type
N3
xd
x
DISTANCE IN THE
DIRECTION OF
DEPTH
N type log
IMPURITY
CONCENTRATION
x1 N2 x2

FIG. 13

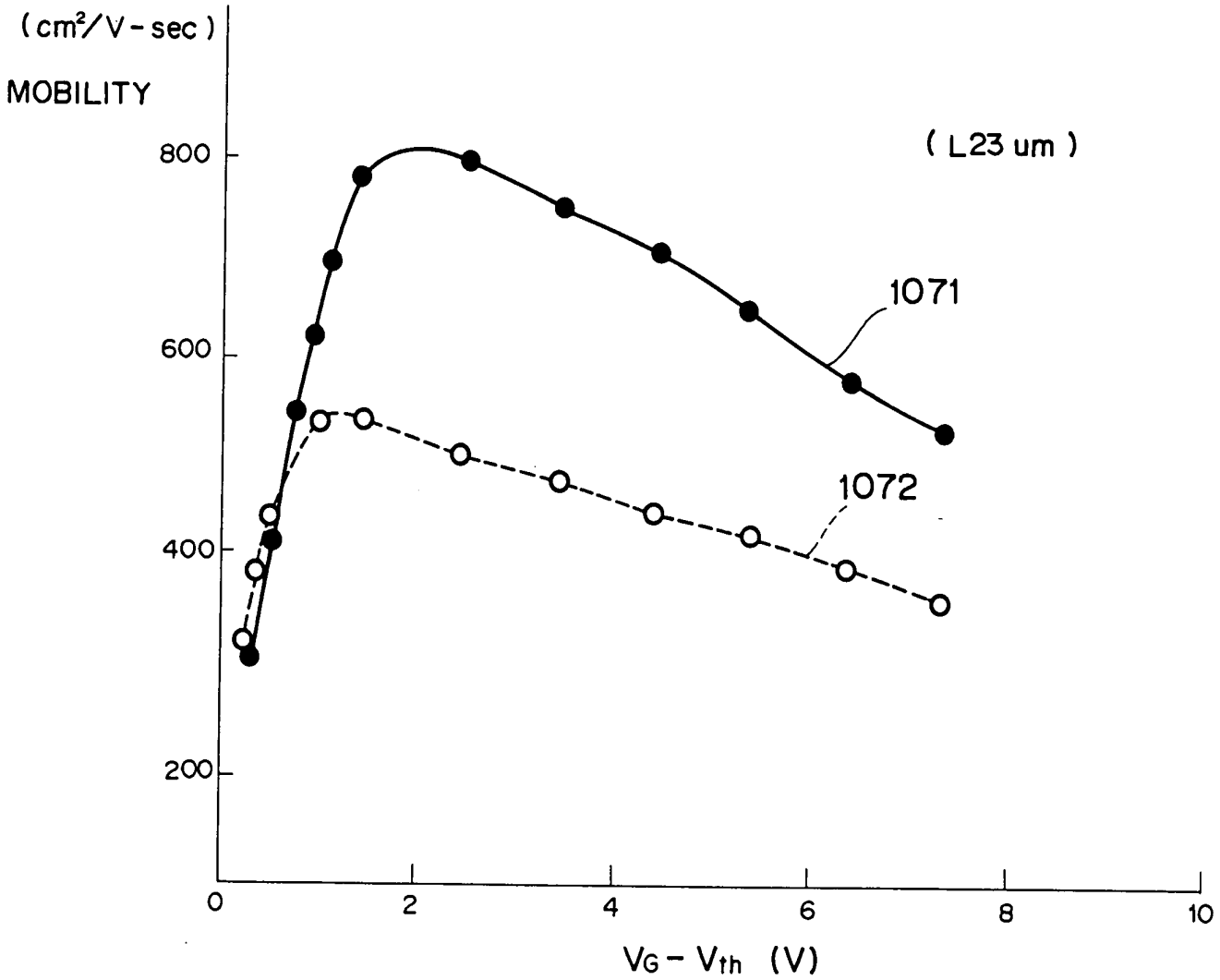
(cm²/V-sec)
MOBILITY
800
600
400
200
0
2
4
6
8
10
VG - Vth (V)
(L23 um)
1071
1072

FIG. 14

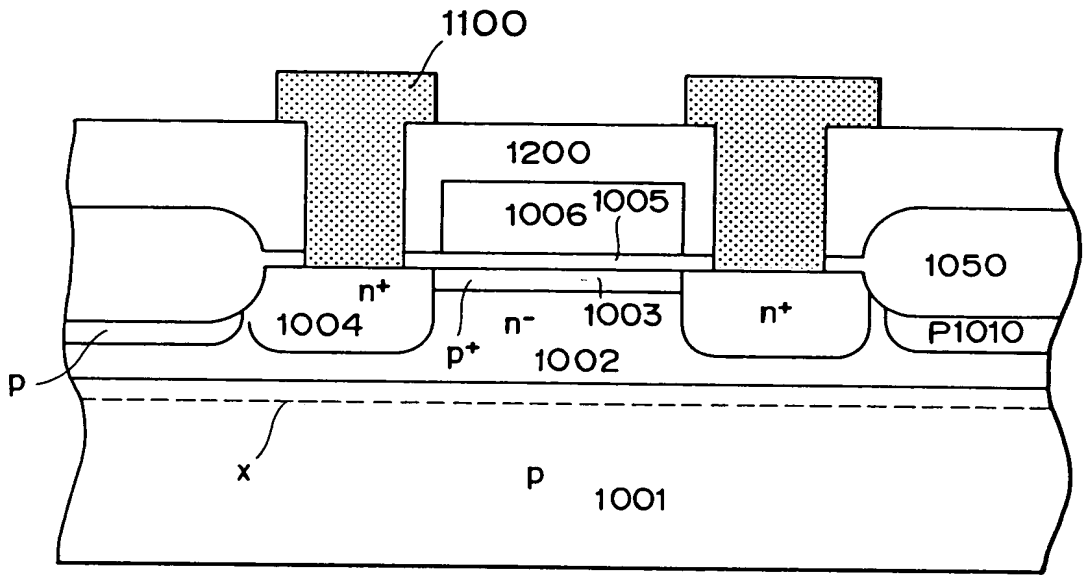

FIG. 15

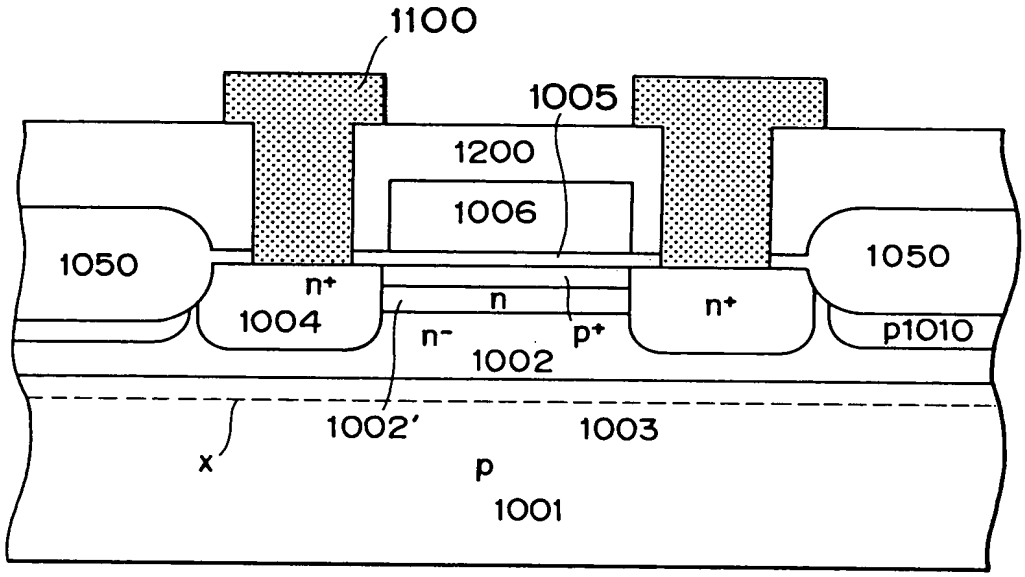
1100
1005
1200
1006
1050
1050
n+
1004
n
n+
n-
p+
p1010
1002
1002'
1003
x
p
1001

FIG. 16